

$^{40}\text{Ca}(^3\text{He},\text{p})$ [1968Pu04](#),[1965Cl01](#),[1966Zu01](#)

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen [#] and Balraj Singh		NDS 135, 1 (2016)	31-May-2016

Target ^{40}Ca $J^\pi=0^+$.

[1968Pu04](#): E=18 MeV ^3He beam was produced at the tandem Van de Graaff accelerator at Max-Planck-Institut für Kernphysik.

Targets of natural calcium evaporated onto carbon backings. Protons were momentum analyzed using a broad-range magnetic spectrograph and detected by nuclear emulsions. Measured $\sigma(E_p, \theta)$. Deduced levels, J^π , L from DWBA analysis.

[1965Cl01](#): levels up to 3.6 MeV excitation. Level energies from this work are quoted by [1971Sh16](#) as a private communication.

[1966Zu01](#): E=10, 12, 15 MeV. Measured $\sigma(E_p, \theta)$. 17 groups reported up to 3.5 MeV excitation energy.

[1970Sc22](#): E=15, 18 MeV. Measured $\sigma(E_p, \theta)$, DWBA analysis. L-transfers for GS (L=0) and 1590 (L=2) group.

Cross sections from [1965Cl01](#) (as quoted by [1971Sh16](#))

Energy	relative cross section
0	17
618	75
1505	80
1589	33
1704	1.5
1847	7
1895	12
2186	9
2220	14
2297	5
2401	4
2461	11
2501	9
2544	2.5
2598	5
2655	3
2727	0.7
2807	8
2846	20
2919	6
2965	5
3021	6
3090	80
3149	8
3239	11
3325	10
3394	70
3483	10
3525	12
3605	5
3695	80
3785	15
3876	32
3934	17

$^{40}\text{Ca}(^3\text{He,p})$ **1968Pu04,1965Cl01,1966Zu01 (continued)** ^{42}Sc Levels

E(level) [†]	L [†]	Relative intensity ^a	E(level) [†]	L [†]	Relative intensity ^a
0	0	100 ^b	3100 10	4	
615 [#] 10	0+2	200 ^b	3149? [‡] 15		
1510 [@] 10	2+4	120	3250 10	6	
1590 10	2	45	3330 10		
1704? [‡] 15			3390 10	2	130
1847? [‡] 15			3483? [‡] 15		
1890 10	0	17 ^b	3525? [‡] 15		
2186? [‡] 15			3605? [‡] 15		
2220? ^{&} 15	2	17	3690 10	0+2	130 ^b
2297? [‡] 15			3780 10	2	30
2401? [‡] 15			3860 10	0+2	38 ^b
2461? [‡] 15			3930 10	2	90
2500 10	2	18	4720 10		45
2544? [‡] 15			4830 10		35
2598? [‡] 15			5440 10		
2655? [‡] 15			5480 10		
2727? [‡] 15			5640 10		
2807? [‡] 15			5810 10		65 ^b
2850 10	4		5970 10		30 ^b
2919? [‡] 15			6090 10		
2965? [‡] 15			6180 10		
3021? [‡] 15					

[†] From 1968Pu04, unless otherwise stated.[‡] From 1965Cl01, as quoted by 1971Sh16.[#] doublet: 610+620.[@] doublet: 1500+1520.[&] 2200 10 (1968Pu04) is a composite of 2186+2220.^a From 1968Pu04. Cross section for L=2 at 15°, unless otherwise stated.^b Cross section for L=0 at 5'.